

CLAIMS:

1. A liquid crystal projector comprising:
 a light source lamp;
 a liquid crystal panel for displaying at
least one color of red, green and blue;
 a power source for supplying electric power
to an element in the liquid crystal projector;
 a fan for removing heat generated by said
power source and said lamp;
 a water-cooling jacket provided on an inner
surface of a part of an external wall of the liquid
crystal projector, which part is adjacent to said lamp;
 a metal pipe arrangement for heat radiation,
placed in a part of the external wall except said part
of the external wall having said water-cooling jacket
on the inner surface thereof; and
 a cooling liquid driving means for driving
cooling liquid to flow in the water-cooling jacket
receiving the heat radiated from said lamp, wherein
 the cooling liquid receiving the heat
generated by said lamp circulates in a circulation path
through said water-cooling jacket, said metal pipe
arrangement and said cooling liquid driving means to
emit the heat to the outside through said metal pipe
arrangement.
2. The liquid crystal projector according to
claim 1, wherein a relaxation member for curbing heat
transmission and lowering the temperature of the

cooling liquid is provided between an external surface of said lamp and said water-cooling jacket so as to contact both the external surface of said lamp and said water-cooling jacket.

3. The liquid crystal projector according to claim 1, wherein a plurality of metallic heat absorbing fins are provided on said water-cooling jacket between an external surface of said lamp and said water-cooling jacket, so that an air layer is formed between tip ends of said heat absorbing fins and the external surface of said lamp.

4. The liquid crystal projector according to claim 1, wherein a relaxation member constituted by combining a plurality of metal plates and a heat insulator provided between the metal plates for lowering the temperature of the cooling liquid is provided between an external surface of said lamp and said water-cooling jacket so as to contact both the external surface of said lamp and said water-cooling jacket.

5. The liquid crystal projector according to claim 1, wherein said part of the external wall having said water-cooling jacket on the inner surface thereof is mounted rotatably, or movably.

6. The liquid crystal projector according to claim 2, wherein said part of the external wall having said water-cooling jacket on the inner surface thereof is mounted rotatably, or movably.

7. The liquid crystal projector according to claim 3, wherein said part of the external wall having said water-cooling jacket on the inner surface thereof is mounted rotatably, or movably.

8. The liquid crystal projector according to claim 4, wherein said part of the external wall having said water-cooling jacket on the inner surface thereof is mounted rotatably, or movably.

9. The liquid crystal projector according to claim 5, wherein a flexible pipe is connected to each of an inlet side and an outlet side of said water-cooling jacket.

10. The liquid crystal projector according to claim 6, wherein a flexible pipe is connected to each of an inlet side and an outlet side of said water-cooling jacket.

11. The liquid crystal projector according to claim 7, wherein a flexible pipe is connected to each of an inlet side and an outlet side of said water-cooling jacket.

12. The liquid crystal projector according to claim 8, wherein a flexible pipe is connected to each of an inlet side and an outlet side of said water-cooling jacket.

13. The liquid crystal projector according to claim 3, wherein each of said head absorbing fins has a surface of an uneven shape.

14. A liquid crystal projector comprising:

a light source lamp;

a liquid crystal panel for displaying at least one color of red, green and blue;

a power source for supplying electric power to each element in the liquid crystal projector;

a fan for removing heat generated by said liquid crystal panel and said lamp;

a water-cooling jacket provided on the liquid crystal panel comprising an incoming polarizing plate, a liquid crystal panel body and an outgoing polarizing plate, thorough which water-cooling jacket cooling liquid flows;

a metal pipe arrangement for heat radiation, placed in an external wall portion of a housing of said liquid crystal projector; and

a cooling liquid driving means for driving the cooling liquid to flow in said water-cooling jacket receiving the heat radiated from said liquid crystal panel, wherein

the cooling liquid receiving the heat generated by said lamp circulates in a circulation path through said water-cooling jacket, said metal pipe arrangement and said cooling liquid driving means to emit the heat the outside through said metal pipe arrangement.

15. The liquid crystal projector according to claim 14, wherein said water-cooling jacket is placed at a location other than a light passage portion in

said liquid crystal panel.

16. The liquid crystal projector according to claim 14, wherein said water-cooling jacket is placed at in a light passage portion in said liquid crystal panel so that said liquid crystal panel is opposed to said water-cooling jacket in its whole area.

17. The liquid crystal projector according to claim 14, wherein said water-cooling jackets are provided between the incoming polarizing plate and the liquid crystal panel body and between the liquid crystal panel body and the outgoing polarizing plate, respectively, and on a light incoming side of said incoming polarizing plate and on a light outgoing side of said outgoing polarizing plate, so that the cooling liquids flowing in mutually opposed water-cooling jackets are in opposite directions.

18. The liquid crystal projector according to claim 15, wherein said water-cooling jackets are provided between the incoming polarizing plate and the liquid crystal panel body and between the liquid crystal panel body and the outgoing polarizing plate, respectively, and on a light incoming side of said incoming polarizing plate and on a light outgoing side of said outgoing polarizing plate, so that the cooling liquids flowing in mutually opposed water-cooling jackets are in opposite directions.

19. The liquid crystal projector according to claim 14, wherein said water-cooling jacket has an

inflow opening for the cooling liquid in an upper portion thereof, and a discharge opening for the cooling liquid in a lower portion thereof.